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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,251	02/18/2004	Palash P. Das	2003-0105-02	3136
21773	7590	12/30/2005	EXAMINER	
CYMER INC LEGAL DEPARTMENT 17075 Thornmint Court SAN DIEGO, CA 92127-2413			FINNEREN, RORY B	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/781,251	DAS ET AL.	
	Examiner	Art Unit	
	Rory Finneren	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/18/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/14/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 3 is objected to because of the following informalities: On line 25 of the page, the word "solid" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-6 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear from the specification what is meant by "the T_{is} of the pulses". For the purposes of this action, the examiner will assume T_{is} is the time duration of the pulse.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7, 8, 13, and 14 are rejected under 35 U.S.C. 103(a) as being obvious over Kousai (6,143,661) in view of Knowles (5,991,324).

Kousai discloses a gas discharge laser crystallization apparatus for performing transformation of a crystal makeup in the substrate of a workpiece (Fig. 3, Abstract) comprising:

a multichamber laser system (Fig. 3, Fig. 4a) comprising:

a first laser unit comprising (Fig. 3, #32):

The limitations including a first gas discharge chamber, a pair of electrodes within the chamber, a laser gas comprising a halogen and a noble gas, are all inherent to the "excimer KrF laser" as taught by Kousai (See col. 2, lines 54-).

Kousai also discloses a second laser unit (Fig 3, #33) comprising further limitations all inherent to the taught "excimer KrF laser".

The Kousai reference does not explicitly disclose the claimed power supply module. Knowles does teach a power supply module for a gas discharge laser crystallization apparatus (see Fig. 9). The Knowles power supply module comprises a DC power source (rectifier; Fig. 9, #110); a pulse compression and voltage step up circuit comprising a multistage fractional step up transformer (Fig. 9, #114), and a second pulse compression and voltage step up circuit connected to the second pair of electrodes and a trigger switch. (Inherent that a power source would be present for each set of electrodes, without which the device would not operate). The limitation involving a single secondary winding passing through each of a plurality of primary windings is inherent to any transformer. Kousai also teaches a solid-state trigger switch (Fig. 9, "S2"; col. 7, line 49). Knowles also discloses a laser timing and control module (Fig. 9, #118) operative to time a closing of a solid state switch based upon operating

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parameters of the pulse compression and voltage step up circuit. Operating the first and second laser units as a POPA configured laser system to produce a single output beam is taught by Kousai (Fig. 3, Col 4, lines 54-). It would have been obvious to one skilled in the art at the time of the invention to combine the laser system of Kousai with the power supply module of Knowles for the purpose of providing the laser system with high voltage, high frequency pulses of power (Col. 7, lines 24-).

Regarding claim 2, the combined references of Kousai and Knowles teach the apparatus of claim 1 wherein the laser system is configured as a POPA laser system and further comprising:

Relay optics operative to direct a first output laser light pulse beam from the first laser unit into the second gas discharge chamber (Kousai, Fig. 3, #35, #36);

A timing and control module which appropriately times the discharges of the first and second pair of electrodes (Inherent to any laser system configured as a POPA system, otherwise it would not function).

Regarding claims 7 and 8, the combined references of Kousai and Knowles teach the apparatus of claim 1 as outlined above and further comprising:

A beam delivery unit in the path of the output beam (Kousai, Fig. 3, #34) and operative to deliver the output beam to a manufacturing tool for transformation of a crystal makeup in a substrate of a workpiece and a beam adjustment module within the

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beam delivery unit comprising a beam parameter monitor and beam parameter adjustment mechanism (Kousai, col. 4, line 54-).

Regarding claims 13 and 14, the combined references of Kousai and Knowles teach the apparatus of claim 7 as outlined above and the further limitations of the timing and control module are also taught by Knowles (Col. 7, lines 24-50).

Claims 3, 9, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kousai in view of Knowles as applied to claim 1 above, and further in view of Iso (US 2001/0050931 A1).

With regard to claim 3, Kousai and Knowles disclose the claimed invention as outlined in claim 1 above. However, Kousai and Knowles do not explicitly disclose a laser system configured in a "POPO" configuration with combining optics and a timing and control module. Iso teaches a laser system in a POPO configuration and comprising: combining optics operative to combine a first output laser light pulse beam from the first laser unit with a second output laser light pulse beam from the second laser unit to produce the single output laser light pulse beam (Fig. 1, #6); and a timing and control module (Fig. 1, #13) that controls the timing of the discharges of the lasers. It would have been obvious to combine the teachings of Kousai and Knowles with the POPO configuration of Iso for the purpose of combining the beams of two lasers to create a single, more powerful beam [0011].

Regarding claim 9, the combined references of Kousai and Knowles teach the apparatus of claim 3 as outlined above and further comprising:

A beam delivery unit in the path of the output beam (Kousai, Fig. 3, #34) and operative to deliver the output beam to a manufacturing tool for transformation of a crystal makeup in a substrate of a workpiece and a beam adjustment module within the beam delivery unit comprising a beam parameter monitor and beam parameter adjustment mechanism (Kousai, col. 4, line 54-).

Regarding claim 15, the combined references of Kousai and Knowles teach the apparatus of claim 9 as outlined above and the further limitations of the timing and control module are also taught by Knowles (Col. 7, lines 24-50).

Claims 4, 5, 10, 11, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kousai in view of Knowles as applied to claims 1 and 2 above, and further in view of Lai (5,329,398).

Regarding claims 4 and 5, Kousai and Knowles disclose the claimed invention as outlined in claim 1 above. However, Kousai and Knowles do not explicitly disclose a pulse stretcher in the path of the single output laser light pulse beam operative to stretch the duration of the pulses in the output laser light beam by at least 2X. Lai does disclose a pulse stretcher in the path of a pulsed laser beam that stretches the duration of the pulses by at least 2X. Therefore, it would have been obvious to one skilled in the art at the time of the invention to add a pulse stretcher to the teachings of Kousai and

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Knowles for the purpose of lowering the power of the ultraviolet pulse and thereby reducing degradation of optical components.

Regarding claims 10 and 11, the combined references of Kousai and Knowles teach the apparatus of claims 4 and 5 as outlined above and further comprising:

A beam delivery unit in the path of the output beam (Kousai, Fig. 3, #34) and operative to deliver the output beam to a manufacturing tool for transformation of a crystal makeup in a substrate of a workpiece and a beam adjustment module within the beam delivery unit comprising a beam parameter monitor and beam parameter adjustment mechanism (Kousai, col. 4, line 54-).

Regarding claims 16 and 17, the combined references of Kousai and Knowles teach the apparatus of claims 10 and 11 as outlined above and the further limitations of the timing and control module are also taught by Knowles (Col. 7, lines 24-50).

Claims 6, 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kousai in view of Knowles and Iso as applied to claim 3 above, and further in view of Lai (5,329,398).

Regarding claim 6, Kousai, Knowles and Iso disclose the claimed invention as outlined in claim 3 above. However, the references do not explicitly disclose a pulse stretcher in the path of the single output laser light pulse beam operative to stretch the duration of the pulses in the output laser light beam by at least 2X. Lai does disclose a pulse stretcher in the path of a pulsed laser beam that stretches the duration of the pulses by at least 2X. Therefore, it would have been obvious to one skilled in the art at

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the time of the invention to add a pulse stretcher to the teachings of Kousai and Knowles for the purpose of lowering the power of the ultraviolet pulse and thereby reducing degradation of optical components.

Regarding claim 12, the combined references of Kousai and Knowles teach the apparatus of claim 6 as outlined above and further comprising:

A beam delivery unit in the path of the output beam (Kousai, Fig. 3, #34) and operative to deliver the output beam to a manufacturing tool for transformation of a crystal makeup in a substrate of a workpiece and a beam adjustment module within the beam delivery unit comprising a beam parameter monitor and beam parameter adjustment mechanism (Kousai, col. 4, line 54-).

Regarding claim 18, the combined references of Kousai and Knowles teach the apparatus of claim 12 as outlined above and the further limitations of the timing and control module are also taught by Knowles (Col. 7, lines 24-50).

Claims 19-36 differ from claims 1-18 only by the substitution of the word "means" in place of the word "apparatus". Claims 19-36 are rejected on the same grounds as their counterparts in the group of claims 1-18.

Claims 37-54 differ from claims 1-18 only in that they are drawn to a method of performing rather than an apparatus for performing the claimed limitations. The prior art references used to reject claims 1-18 above teach apparatuses as well as their

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corresponding methods. Therefore claims 37-54 are rejected on the same grounds as their counterparts in the group of claims 1-18.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rory Finneren whose telephone number is (571) 272-2243. The examiner can normally be reached on Mon. - Fri. 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Oh Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Minsun Harvey
Supervisory Patent Examiner
Art Unit 2828

rbf

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